Harnessing the Potential of Smallholder Farmers to Innovate in the Caribbean Community (CARICOM)

CIFSRF CARICOM Food Security Project

Caribbean Week of Agriculture (CWA)

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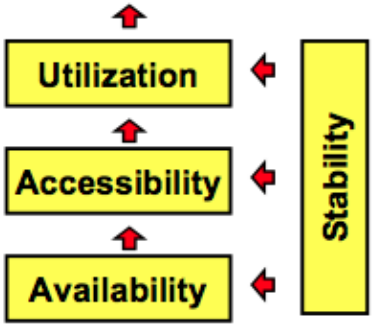
Complex Food Security Challenges

"…when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for a healthy and active life."

(World Food Summit Rome Declaration, 1996)

Four Dimensions of Food Security



(Gross et al., 2000)

An Evolution: Multidimensional Food Security

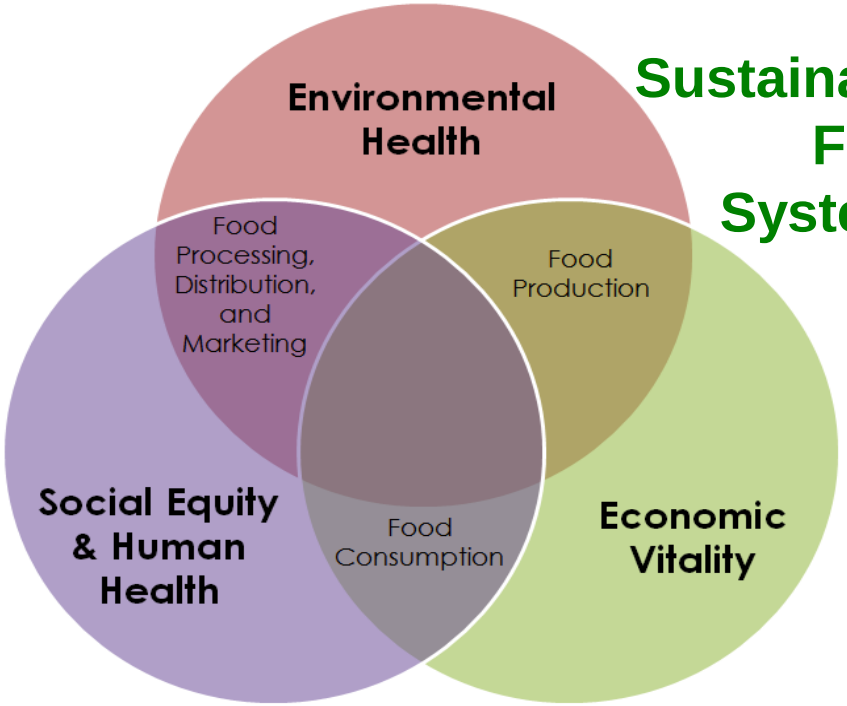
Renzaho & Mellor (2010)

Sustainable & Resilient Food Systems

Resilient Food Systems

1. Strengthen diversity
2. Rebuild local institutions and traditional support networks
3. Reinforce local knowledge
4. Build on ability of farmers to adapt and reorganize

Pingali et al.(2005)



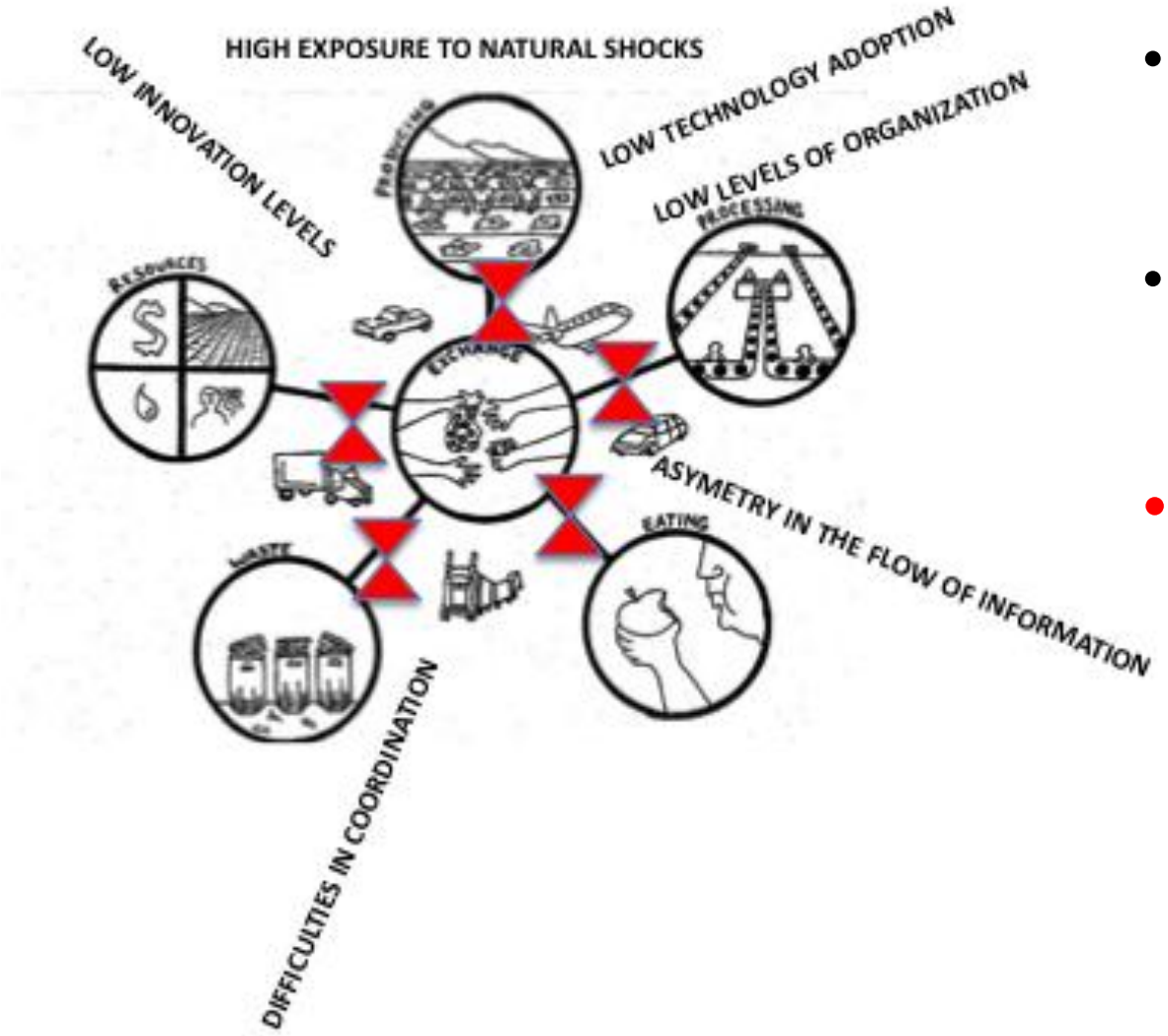
http://www.foodsecuritynews.com/What-is-food-security.htm

Resilience

1) Response to change
2) Ability to self-organize
3) Capacity to enhance learning and adaptation

Obrist (2010)

Smallholder Farmers Resilient & Sustainable: But…



- Sustainable agro-ecological production
- Resilient but producing under capacity
- **Opportunity for action**

https://www.msu.edu/~howardp./foodsystem.html

What is Social Capital ?

1) *Personal support/ assistance directly available*
2) *Community support/ assistance indirectly available to members through network of enduring connections & interactions* (McGinnis, 2011)

- "Glue" holding communities together (Putnam, 2000)
- Resources embedded in groups, actual or virtual consisting of mutual acquaintances (Lin, 2001; Bourdieu, 1992)
- Three dimensions: bonding, bridging and linking social capital (Groteart et al., 2004)

Social Capital & Physical Capital

Characteristics	SOCIAL CAPITAL	PHYSICAL CAPITAL
Degraded or lost from use	No	Yes
Difficult to measure and assess easily	Yes	No
Difficulty to build up through external intervention	Yes	No
Formal institutions can affect availability	Yes	Yes

(Dasgupta et al., 2000)

Social Capital/Networks & Food Security

FEATURES	Natural Resource Governance Studies	CARICOM Food Security
Groups/goods/ services not well integrated into the market	x	x
Social relationships shape outcomes	x	x
Understand social-ecological systems	x	x
Design more integrative policies	x	x

(Bodin and Crona, 2000; Crona and Hubacek, 2010)

Research Questions & Objective

Research Questions:

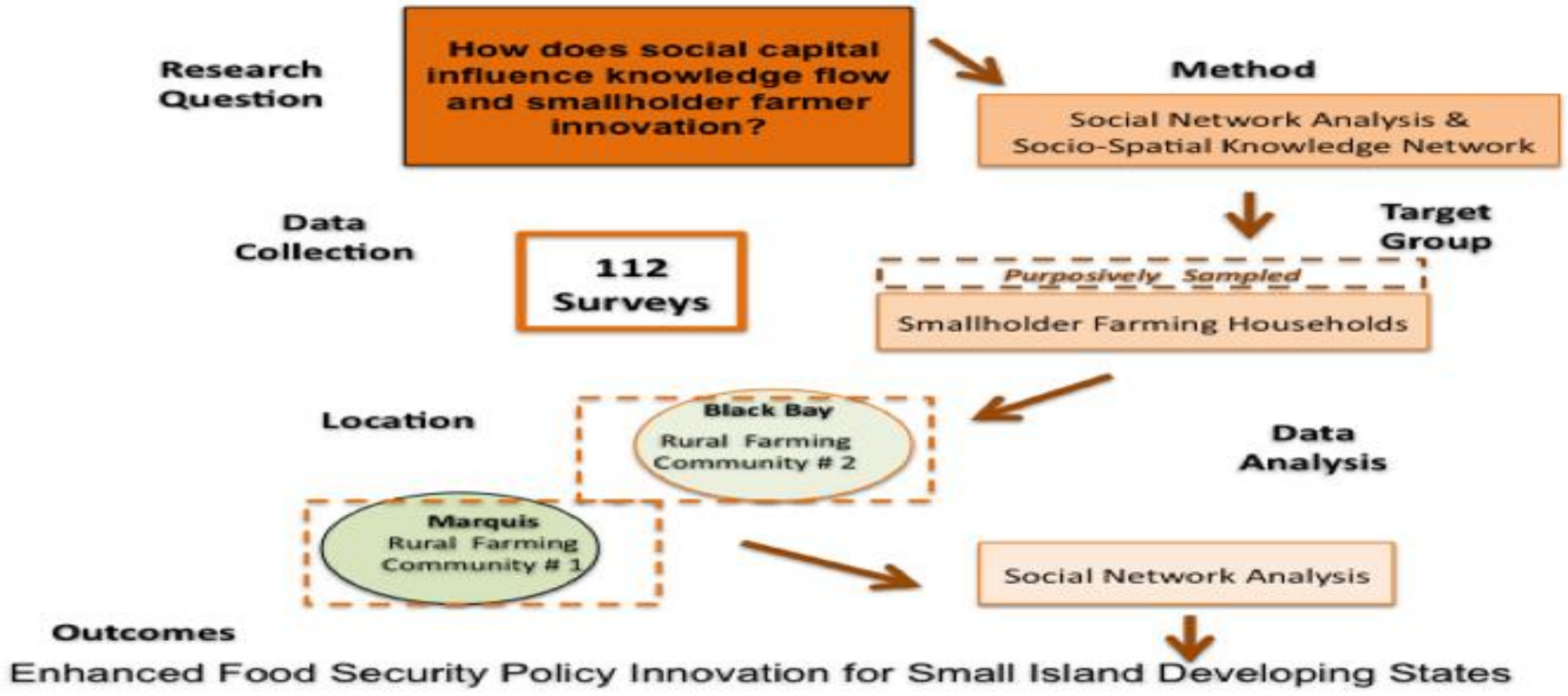
1. **Can SNA be used to measure social capital of smallholder farmers in the Caribbean?**
2. **How does social capital and Knowledge networks influence smallholder farmer innovation?**

Research Objective:

- To identify opportunities to harness the potential of smallholder farmers to enhance innovation towards improved food security policy in the Caribbean Community

Research Design

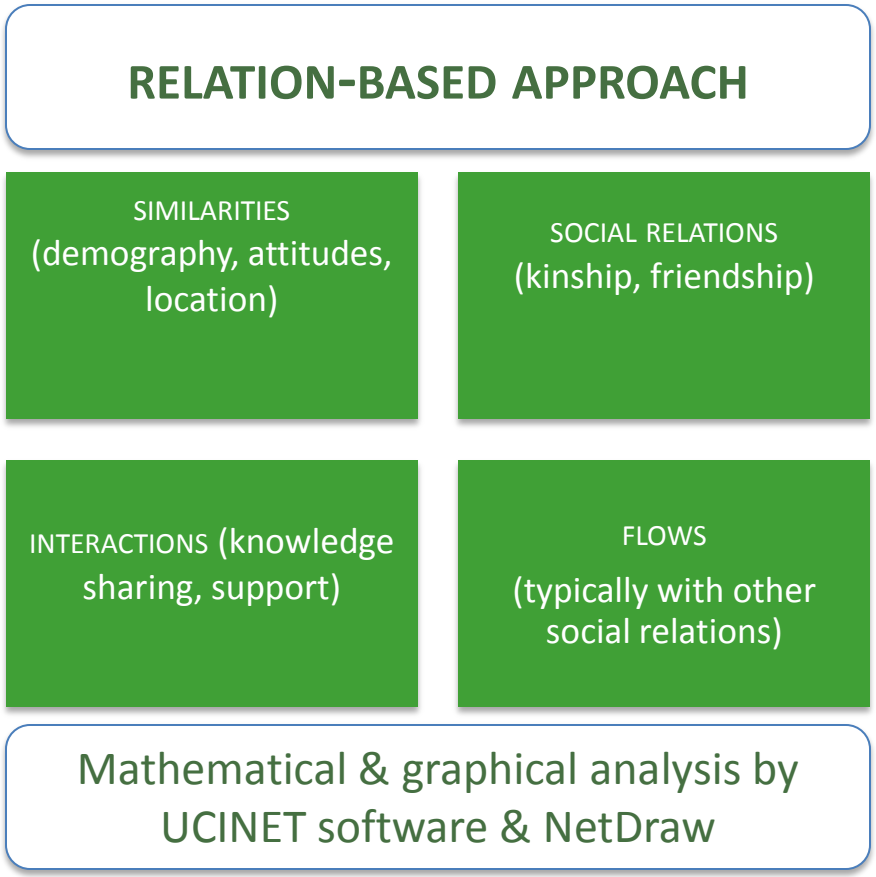
- Mixed methods approach within a combined grounded theory – case study research paradigm (Glaser and Strauss, 1967; Yin, 2009)
- Data collected from June to August 2012 in Saint Lucia



Social Network Analysis (SNA)

- Relational (nodes as points & relations as lines)
- Actors interdependent
- Ties foster transfer of resources

(Wasserman and Faust, 1994; Degenne and Forse, 1994)



(Borgatti et al., 2009)

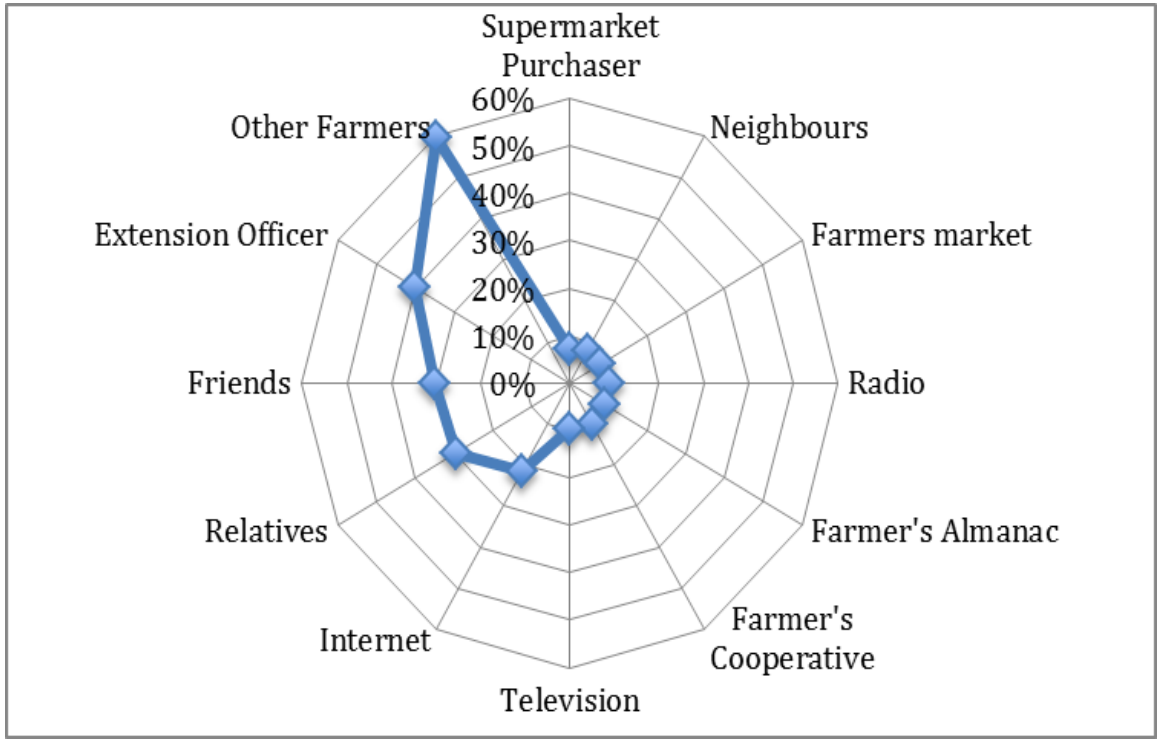
Results: Basic Network Demographics

Network size	Black Bay 40 of 1560			Marquis 72 of 5112		
Relation	No of ties	density	Avg degree	No of ties	density	Avg degree
Close FRN	45	0.029	1.125	64	0.013	0.889
Know OUT	59	0.038	1.475	102	0.02	1.417
Know IN	62	0.40	1.550	107	0.021	1.486
Support RQ	33	0.021	0.825	68	0.013	0.944
PT Support	50	0.032	1.250	102	0.020	1.417
Kinship	53	0.034	1.325	268	0.052	3.722

Results: Social Learning & Innovation

Social learning becomes critical where there are perceived knowledge asymmetries- everyone does not know the same thing

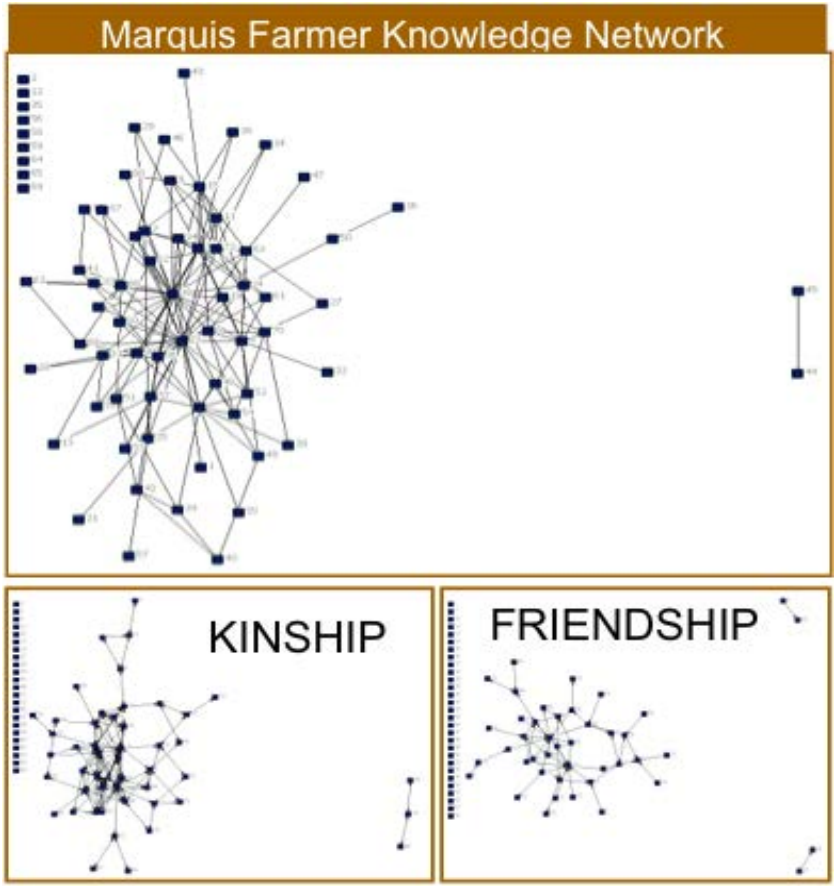
(Niehaus, 2011)



Farmer Knowledge Sources

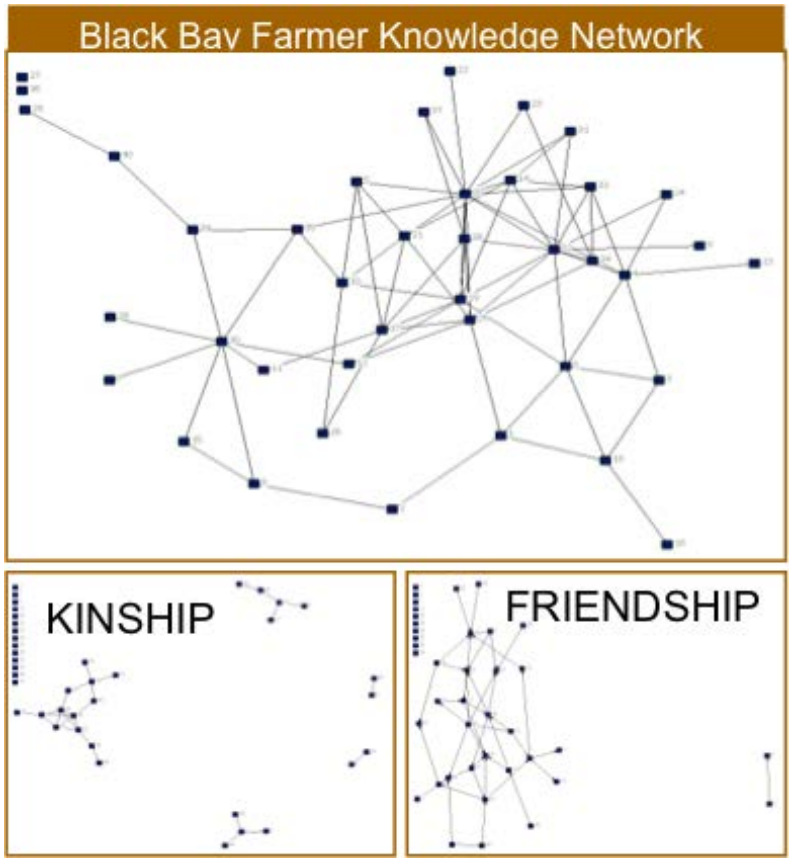
- 2/3 adopted an innovation in the past 5 years
- Social learning the primary means of knowledge exchange

Marquis Knowledge Network (n=72)



Marquis- strong ties (bonding social capital) foster group identity & cohesiveness) but less responsive to innovation & change.

Black Bay Knowledge Network (n=40)



Black Bay- weak ties facilitate exchange of new information & innovation diffusion.

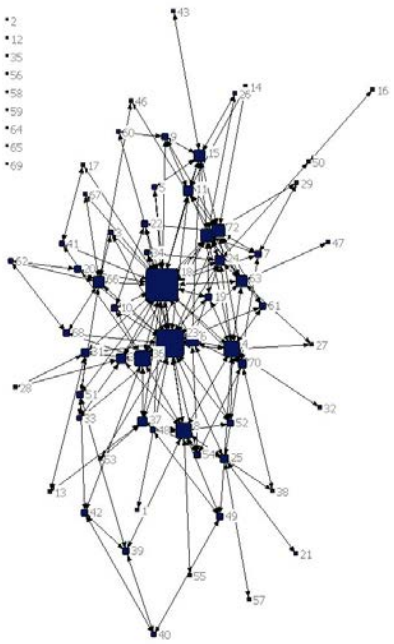
1. Classifying Rural Communities

BONDING SOCIAL CAPITAL	BRIDGING SOCIAL CAPITAL
In Marquis, strongly associated with kinship ties	In Black Bay, not based on kinship nor close friendship
Strong ties between similar actors/ horizontal ties to family, friends, neighbors	Horizontal ties across different groups
Homophily (birds of a feather) (McPherson et al., 2001)	Granovetter's (1973) "strength of weak ties" –provide new information
Socially homogeneous and strongly connected relations increases normative pressures (Burt, 1984)	Diffusion of information and trust, fostering transactions and economic growth (Sabatini, 2009)
Foster belonging and identity and group formation (Coleman, 1990)	Increased weak ties, the more critical the role in facilitating information flows (Scott and Carrington, 2011)

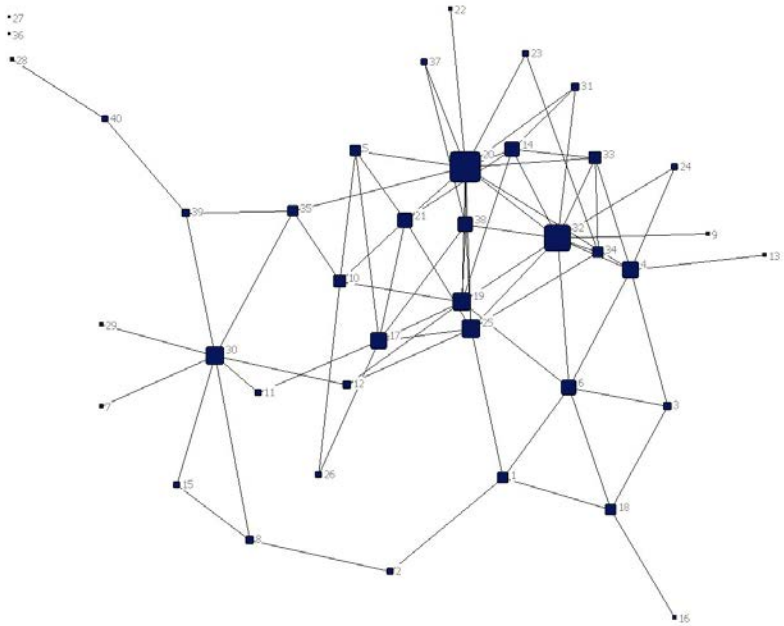
2. Identifying Champions: Key Nodes

- Building upon existing social learning through informal, enduring and trusted farmer social networks
- Social learning as a trusted knowledge transfer mechanism can be used to enhance innovation

MARQUIS



BLACK BAY



3. Evaluating Social Positions: Brokerage Roles

Five Brokerage Roles

1. Coordinator- member broker in group
2. Consultant-non member broker in group
3. Gate keeper-controls group access
4. Representative-non member contact point for group
5. Liaison-brokers two groups but in neither

(Gould and Fernandez, 1989)

1. Applying normalized index scores (actual over expected ties)
2. Evaluating farmers selected on the McGill –UWI CIFSRF CARICOM Project to introduce irrigation technologies

Social Roles (Black Bay)

		1 Coordinat	2 Gatekeepe	3 Represent	4 Consultan	5 Liaison	6 Total
32	32	3.381	0.983	0.983	0.094	0.226	1.000
20	20	1.736	1.275	1.275	0.364	0.514	1.000
14	14	0.966	1.604	1.604	0.642	0	1.000
22	22	0	0	0	0	0	0
35	35	0	1.684	1.123	0.561	1.357	1.000
4	4	0.902	1.497	1.497	0.898	0	1.000
9	9	0	0	0	0	0	0
18	18	0	0.561	0.561	1.123	2.714	1.000
6	6	2.705	1.123	1.123	0	0.543	1.000
34	34	0	1.684	1.684	0	1.357	1.000
33	33	6.762	0	0	0	0	1.000
38	38	0	1.604	1.604	0.642	0.776	1.000
19	19	1.288	1.497	1.497	0.214	0.517	1.000
30	30	0.255	1.017	1.017	1.525	0.922	1.000
7	7	0	0	0	0	0	0
12	12	2.254	1.497	1.497	0	0	1.000
25	25	0.322	1.283	1.283	0.428	1.551	1.000
1	1	0	1.347	1.347	0	2.171	1.000
37	37	0	0	0	0	0	0
40	40	0	0	0	4.492	0	1.000

Summary

- Social capital and SNA can be used to harness the potential of smallholder farmers by:
  1. Classifying/targeting communities for intervention
  2. Identifying innovation champions among farmers
  3. Evaluating social roles in the community
- Better understanding of social capital in rural communities has the potential to improve design of science-based policies, and selection of communities for targeted intervention to foster innovation.

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